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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/669,520	09/24/2003	Masanobu Sato	P/4178-9	4349
2352	7590	10/18/2005	EXAMINER	
OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403			TADESSE, YEWEBDAR T	
			ART UNIT	PAPER NUMBER
			1734	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/669,520	Applicant(s) SATO ET AL.	
	Examiner Yewebdar T. Tadesse	Art Unit 1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-11 and 47-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-7,10,11 and 55 is/are allowed.
- 6) ☒ Claim(s) 9 and 47-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>071805</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 9 and 47-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miya et al (US 2004/0040584) in view of Mito (US 2002/0106445).

As to claim 9, Miya et al teaches (see paragraphs 6, 16 and Figs 12-13) a substrate processing apparatus that a processing liquid is supplied to one major surface of a substrate and one major surface is subjected to predetermined substrate processing, comprising: an atmosphere blocking member (102 or spin base 104) which is faced with other major surface of the substrate and that is away from the substrate

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(W); and a gas supply unit (gas supply part 146) which supplies an atmosphere gas to a space which is created between the atmosphere blocking member (spin base 104) and the substrate (W). Miya et al further discloses an atmosphere blocking member (102, or spin base 104) and the substrate (W) having same diameter (see Fig 13). Miya et al specifically teaches that it's conventional to use a spin base as atmosphere blocking member (see paragraphs 6 and 16). However, a substrate-facing surface of the atmosphere member (spin base 104) which is faced with the other major surface of the substrate becomes closer to the substrate with a distance toward a periphery edge of the atmosphere blocking member is not taught in Miya. Mito discloses (see Fig 1) a spin base (chuck 8) having a substrate-facing surface of the spin base (chuck 8), which is faced, with the other major surface of the substrate becomes closer to the substrate with a distance toward a periphery edge of the spin base (chuck 8). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a substrate-facing surface of the atmosphere member (spin base 104) which is faced with the other major surface of the substrate becomes closer to the substrate with a distance toward a periphery edge of the spin base in Miya et al to attain small contact area to the rear or other surface of the substrate as taught by Mito (see paragraph 41).

As to claim 47, Miya et al teaches (see Figs 12-13) the processing apparatus comprising a rotation means (rotary cylinder 106), which rotates the substrate to which processing liquid is supplied through port (130).

With respect to claim 48, as shown in paragraph 6 and Fig 13 of Miya et al, the rotation means (rotary cylinder 106) rotates the atmosphere blocking member (spin base 104) and the substrate.

With respect to claims 49-52, Miya et al lacks teaching three or more support members disposed at the edges of the atmosphere blocking member or spin base line-contacting the edge surface of the substrate and their width of contact surface and portion of line contact with the surface of the substrate. Mito shows on Figs 1-2 four support members (suction portions 9a-9d) on the edges of the spin base (chuck 8) supporting the substrate and line contacting the edge surface of the substrate (see also paragraph 41), wherein each one of support member along a direction of the line contact having same width with a distance away from the substrate or the width of the line contact of the edge surface and the width of contact surface (surface of the suction portions 9a-9d) appears to be the same. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include four support members supporting the substrate and line-contacting the surface of the substrate and having same width of contact surface and a portion of a line contact or same width of each of the support member with a distance away from the substrate in Miya et al to contact area to the rear or other surface of the substrate at equiangular interval along the circumference of the circle centering the center of the wafer as taught by Mito (see paragraph 41).

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4. Claims 53-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miya et al (US 2004/0040584) in view of Mito (US 2002/0106445) as applied to claim 9 above, and further in view of Matsukawa et al (US 5,518,542). Miya et al as modified lacks teaching a transportation unit the substrate to the processing unit and a reversing unit, which reverses substrate. Actually, Miya et al teaches a processing unit having processing liquid and gas supplied in both directions (see Fig 13). The use of a transportation unit to transfer the substrate from processing unit and a reversing unit to reverse the substrate is well known in the semiconductor processing industries; for instance – Matsukawa et al discloses (see Figs 6-7 and Abstract) double-sided substrate cleaning apparatus having a transportation unit (conveying mechanism 5) to transfer the substrate from processing unit and reversing unit (reversing mechanism 10) to reverse the substrate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a reversing unit in Miya et al in case one of the upper or the lower processing fluid supplying means is not working and reversing of the substrate is required. It would also have been obvious to one of ordinary skill in the art at the time the invention was made to include a transportation unit in Miya et al to transport the wafer in and out of the substrate-processing unit.

Allowable Subject Matter

5. Claims 1-7, 10-11 and 55 are allowed.

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6. The following is a statement of reasons for the indication of allowable subject matter: with respect to claims 1-7 and 10-11, reasons for allowance is cited in the non-final action mailed on 03/28/2005.

As to claim 55, prior art of record does not disclose or suggest a substrate processing apparatus comprising among others, a central area of the substrate-facing surface of the atmosphere blocking member which is faced with an approximately central portion of the substrate becomes closer to the substrate with a distance toward a periphery edge of the atmosphere blocking member over the entire circumference of the atmosphere blocking member.

Response to Arguments

7. Applicant's arguments filed 07/28/2005 have been fully considered but they are not persuasive. With respect to the atmosphere-blocking member having a diameter the same or smaller than a diameter of the substrate (claim 9 limitation), Miya et al discloses an atmosphere blocking member (102, or spin base 104) and the substrate (W) having same diameter (see Fig 13), as recited in the rejection above. It is also disclosed (see paragraph 5 and Fig 13) in Miya et al that the atmosphere-blocking member (102) has the same diameter as the wafer (W). As such, Miya et al teaches this limitation and the claimed invention (claim 9) is met by Miya et al in view of Mito.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yewebdar T. Tadesse whose telephone number is (571) 272-1238. The examiner can normally be reached on Monday-Friday 8:00 AM-4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on (571) 272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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